

What is claimed is:

1. A method for preventing contamination during a manufacturing operation of a product, wherein the product is associated with at least one product contributive attribute indicating a property of the product, and wherein the operation is associated with at least one operation acceptance attribute indicating a property of the operation, the method comprising:

comparing the product contributive attribute and the operation acceptance attribute prior to performing the operation on the product;

determining whether the comparison indicates that the product is not compatible with the operation;

performing the operation if the product and operation are compatible; and suspending the operation if the product and operation are not compatible.

2. The method of claim 1 further comprising identifying a correspondence between the product contributive attribute and the operation acceptance attribute, wherein the suspension of the operation is in response to the identification of the correspondence between the product contributive attribute and the operation acceptance attribute.

3. The method of claim 1 wherein comparing the product contributive attribute and the operation acceptance attribute identifies no correspondence.

4. The method of claim 1 wherein the product contributive attribute provides information about a prior operation encountered by the product.

5. The method of claim 1 wherein the operation acceptance attribute identifies contaminants unacceptable to the operation.

6. The method of claim 1 wherein the product is also associated with at least one product routing attribute, and wherein the operation is associated with at least one operation contributive attribute, the method further comprising comparing the product routing attribute and the operation contributive attribute.

7. The method of claim 6 further comprising identifying a correspondence between the product routing attribute and the operation contributive attribute, wherein suspending the operation is in response to the identification of the correspondence between the product routing attribute and the operation contributive attribute.

8. The method of claim 6 wherein comparing the product routing attribute and the operation contributive attribute identifies no correspondence.

9. The method of claim 1 further comprising:
performing an intermediate operation; and
altering a product attribute file associated with the product in response to performing the intermediate operation, wherein the suspension of the operation is responsive to the altered product attribute file.

10. The method of claim 1 wherein the at least one product contributive attribute indicates a metal.

11. The method of claim 1 wherein the product is associated with an identifier and wherein the operation retrieves the product contributive attribute based on the identifier.

12. A method for preventing contamination during a substrate manufacturing operation, wherein the operation is associated with at least one operation acceptance attribute indicating a property not acceptable to the operation, and wherein a substrate is associated with at least one substrate contributive attribute indicating a property currently associated with the substrate, the method comprising:

determining if the substrate contributive attribute corresponds to the operation acceptance attribute;

if the substrate contributive attribute corresponds to the operation acceptance attribute, determining if the operation acceptance attribute restricts the substrate contributive attribute; and

if the operation acceptance attribute restricts the substrate contributive attribute, suspending the operation with respect to the substrate.

13. The method of claim 12 further comprising:

if the substrate contributive attribute does not correspond to the operation acceptance attribute, determining if a correspondence is required to perform the operation; and

if a correspondence is required, suspending the operation with respect to the substrate.

14. The method of claim 13 further comprising determining if a substrate routing attribute associated with the substrate corresponds to an operation contributive element associated with the operation, wherein the substrate routing attribute indicates a material not acceptable to the substrate, and wherein the operation contributive attribute indicates a material used in the operation.

15. The method of claim 14 further comprising:

if the substrate routing attribute corresponds to the operation contributive attribute, determining if the substrate routing attribute restricts the operation contributive attribute; and

if the substrate routing attribute restricts the operation contributive attribute, suspending the operation with respect to the substrate.

16. The method of claim 15 further comprising:

- if the substrate routing attribute does not correspond to the operation contributive attribute, determining if a correspondence is required to perform the operation;
- if a correspondence is required, suspending the operation with respect to the substrate; and
- if a correspondence is not required, performing the operation on the substrate.

17. The method of claim 12 further comprising:

- assigning a substrate attribute file to the substrate, wherein the substrate attribute file includes at least one of the substrate contributive attribute and the substrate routing attribute;
- performing the operation; and
- updating the substrate attribute file using the operation contributive attribute after performing the operation.

18. The method of claim 12 further comprising setting a flag to indicate that validation is needed for at least one of the substrate contributive attribute and the operation acceptance attribute.

19. A system for preventing contamination during semiconductor manufacturing, the system comprising:

- an attribute file associated with a product, wherein the attribute file includes at least one of a product contributive attribute and a product routing attribute;
- an operation file associated with an operation, wherein the operation file includes at least one of an operation contributive attribute and an operation acceptance attribute;
- compatibility check means to determine if the product is compatible with the operation based on a comparison of the product contributive or product routing attribute with the operation contributive or operation acceptance attribute; and

hold means for placing the operation on hold with respect to the product if the compatibility check determines the product is not compatible with the operation.

20. The system of claim 19 wherein the product is a substrate and wherein the operation is a semiconductor processing operation.